

DETAILED ACTION

1. The Amendment received on January 22, 2008 has been entered into the record.

Drawings

2. The drawings filed on June 30, 2000 (Figs. 1-10) and on April 22, 2003 (corrected Fig. 7) are acceptable subject to correction of the informalities indicated on the "Notice of Draftsperson's Patent Drawing Review," PTO-948 of Paper #9 mailed July 8, 2003 and a proper replacement sheet of amended Fig. 7 as mentioned in Office Action 20040316. In order to avoid abandonment of this application, correction is required in reply to the Office action. The correction will not be held in abeyance.

EXAMINER'S AMENDMENT

3. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Attorney Edward McMahon on February 7, 2008. Please see attached PTOL-413B.

The amended claims are:

49. (Currently Amended.) A device for making quantified determinations of characteristic parameters of a surface, the characteristic parameters being selected from the group of gloss, haze, and distinctness of image, comprising:

at least one optical system having:

a light diode emitting an emitted light at the surface so that said emitted light hits the surface at a predetermined angle of incidence, said emitted light having a light intensity over the entire visible spectral range;

a lens parallelizing said emitted light before said emitted light hits the surface;

at least one photo sensor receiving a reflected light from the surface at a predetermined angle of reflection, said photo sensor generating a signal based on said reflected light, wherein said predetermined angle of incidence and said predetermined angle of reflection are mirror symmetrical to each other with respect to a normal to the surface;

filter means arranged in a light path between said light diode and said at least one photo sensor and for adapting a spectrum such that an aggregate spectrum of said light diode, said at least one photo sensor, and said filter means corresponds to an aggregate of daylight spectrum and eye sensitivity;

a lens for focusing said reflected light into a light beam, wherein said light beam impinges on said at least one photo sensor; and

evaluation means for determining the gloss, haze, and distinctness of image of the surface based on said signal, said signal corresponding to portions of said reflected light, wherein said at least one optical system comprises three optical systems, and wherein said predetermined angle of incidence and reflection is different for each of said three optical systems.

66. (Currently Amended) The device according to claim 49, wherein each of said predetermined angles of incidence do [[does]] not vary over time.

71. (Currently Amended) The device according to claim 49, wherein said three optical systems are arranged in such a way that all three of said three optical systems essentially illuminate a ~~[[the]]~~ same measurement point.

72. (Currently Amended) A method for making quantified determinations of the gloss, haze, and distinctness of image of a surface, comprising the steps of:

controlling a light diode to emit an emitted light at the surface so that said emitted light hits the surface at a predetermined angle of incidence, said emitted light having a light intensity over the entire visible spectral range;

parallelizing said emitted light before said emitted light hits the surface;

focusing a reflected light that is reflected from the surface along a predetermined angle of reflection into a light beam having an aggregate spectrum, wherein said angle of incidence and said angle of reflection are mirror symmetrical with respect to a normal to the surface;

arranging a photo sensor so that said light beam impinges onto said photo sensor;

controlling said photo sensor to detect said light beam and to emit an electrical signal based on said light beam;

arranging a filter means in a light path between said light diode and said photo sensor, said filter means filtering said emitted light and/or said reflected light so that an aggregate spectra corresponds to an aggregate of daylight spectrum and eye sensitivity;

determining the gloss, haze, and distinctness of image based on said signal, said signal corresponding to portions of said reflected light;

controlling a second light diode to emit a second emitted light at the surface so that said second emitted light hits the surface at a second predetermined angle of incidence, said second emitted light having a light intensity over the entire visible spectral range, said second predetermined angle of incidence being different from said predetermined angle of incidence;

parallelizing said second emitted light before said second emitted light hits the surface;

focusing a second reflected light that is reflected from the surface along a second predetermined angle of reflection into a second light beam having an aggregate spectrum, wherein said second angle of incidence and second angle of reflection are mirror symmetrical with respect to a normal to the surface, said second predetermined angle of reflection being different from said predetermined angle of reflection;

arranging a second photo sensor so that said second light beam impinges onto said second photo sensor;

controlling said second photo sensor to detect said second light beam and to emit a second electrical signal based on said second light beam;

arranging a second filter means in a second light path between said second light diode and said second photo sensor, said second filter means filtering said second emitted light and/or said second reflected light so that an aggregate spectra corresponds to an aggregate of daylight spectrum and eye sensitivity; and

determining the gloss, haze, and distinctness of image based on said signal and said second signal.

The amendments to the specification are:

Please replace the paragraph beginning on page 15 line 23 with the following paragraph:

In a preferred embodiment of the present invention, the predetermined angle at which the light emitted from at least one of said optical means is directed onto the surface is an angle selected from among a group of angles which include, in particular, the angles of 0° , 5° , 10° , 15° , 20° , 30° , 45° , 60° , 75° , 80° and 85° , whereby these angles are defined as the angle between the rays (incident or emergent) and the vertical, respectively normal ~~standard~~, to the measurement surface. It is especially preferable that the angles at which the first and second optical means are aligned to the surface are identical.

Please replace the paragraph beginning on page 16 line 5 with the following paragraph:

In a preferred embodiment of the present invention, a second and preferably also a third optical system is provided, whereby the arrangement of an optical system relative the surface to be measured is preferably at 20° , 60° or 85° . In the event that three optical systems are provided, then preferably one will be aligned at 20° , a second at 60° and a third at 85° relative to the normal to the surface to be measured.

Please replace the paragraph beginning on page 16 line 10 with the following paragraph:

It is also possible that a further optical system, respectively optical means, is provided for a separate color measurement and which would then be aligned, for example, at 45° to the normal to the surface ~~standard~~.

Please replace the paragraph beginning on page 16 line 13 with the following paragraph:

The above-cited angles of 20° , 60° and 85° relative to the normal to the measurement surface ~~standard~~ are especially, but not exclusively, applied when determining the gloss of the surface being measured. The 20° -geometry is specifically suited for high gloss reference blocks, while the 60° -geometry is essentially suitable for all surfaces. The 85° -geometry is preferably selected in order to achieve a better differentiation in surfaces in which the gloss at the 60° -geometry is less than 10 units according to the ISO 2813. It is preferable to calibrate the optical means for the 20° , 60° and 85° alignments with an accuracy greater than $\pm 0.1^\circ$.

Please replace the paragraph beginning on page 26 line 10 with the following paragraph:

The measuring device depicted in Fig. 9 has a housing 100 comprising the measuring optics and an opening 107. As in the previous embodiments, a first optical system encompasses a first optical means 2 and a second optical means 10, their optical axes each being aligned at angles 17, 18, respectively, to the normal to the ~~standard of~~ measurement surface 108.

Please replace the paragraph beginning on page 27 line 19 with the following paragraph:

First optical means 2a and a second optical means 10a of first optical system 30 are each set at an angle of 20° to the normal to the ~~standard of~~ measurement surface 8 in order to be able to reliably and accurately determine the optical parameters and in particular gloss of the surface to be measured should, for example, a high-gloss surface be assessed.

Please replace the paragraph beginning on page 28 line 3 with the following paragraph:

The second optical system 21 is connected in a similar manner to the first optical system, however, the likewise symmetrically arranged first optical means 2b and second optical means 10b are directed at an angle of 60° to the normal to the ~~standard of, respectively perpendicular to,~~ measurement surface 8.

Please replace the paragraph beginning on page 28 line 10 with the following paragraph:

In accordance with the present embodiment, the inventive surface measuring device includes a third optical system, its radiated light is directed at angle of 85° to the normal to the ~~standard of the~~ surface to be measured.

Please replace the paragraph beginning on page 28 line 16 with the following paragraph:

The light radiated through the aperture and filter arrangement 4c of first optical means 3c of third optical system 32 is conducted via fiber 202 to aperture 204 and emitted more or less perpendicular to the surface to be measured. A prism 203 arranged near the surface redirects the light in such a manner that it impinges upon the measurement surface at an angle of 85° to the normal to the surface ~~perpendicular~~.

Allowable Subject Matter

4. **Claims 49-55, 57, 60-72** are allowed.

The following is an examiner's statement of reasons for allowance:

As to **claim 49**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a device for making quantified determinations the at least one optical system comprises three optical systems, in combination with the rest of the limitations of **claims 45-55, 65, 66, 69, and 71**.

As to **claim 72**, the prior art of record, taken alone or in combination, fails to disclose or render obvious in a method for making quantified determinations the particular arranging a second filter means and determining step, in combination with the rest of the limitations of **claims 57, 60-64, 67, 68, 70, and 72**.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Fax/Telephone Numbers

If the applicant wishes to send a fax dealing with either a proposed amendment or a discussion with a phone interview, then the fax should:

1) Contain either a statement "DRAFT" or "PROPOSED AMENDMENT" on the fax cover sheet; and

2) Should be unsigned by the attorney or agent.

This will ensure that it will not be entered into the case and will be forwarded to the examiner as quickly as possible.

Papers related to the application may be submitted to Group 2800 by Fax transmission. Papers should be faxed to Group 2800 via the PTO Fax machine located in Crystal Plaza 4. The form of such papers must conform to the notice published in the Official Gazette, 1096 OG 30 (November 15, 1989). The CP4 Fax Machine number is: (571) 273-8300

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gordon J. Stock whose telephone number is (571) 272-2431.

The examiner can normally be reached on Monday-Friday, 8:00 a.m. - 6:30 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr., can be reached at 571-272-2800 ext 77.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private Pair system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Art Unit: 2877

/G. J. S./

GJS

Examiner, Art Unit 2877

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